ABSTRACT

Wavelength spread-spectrum coding enables a multi-channel communication systems to transmit more information signals than the number of transmission channels. At the transmitter, each information signal is encoded with a respective spreading code to generate a coded signal corresponding to each bit of the spreading code and the coded signals corresponding to the same bit of the spreading codes are allocated to a respective transmission channel. Then, in each transmission channel, the coded signals allocated thereto are analog summed to generate a modulation signal, and a transmission signal is modulated in response to the modulation signal. In the receiver, each information signal is recovered by multiplying the channel signal from each transmission channel by a respective bit of the spreading code assigned to the information signal to generate a respective product signal, summing the product signals to generate a sum signal, and subjecting the sum signal to thresholding.